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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/761,517	01/21/2004	Yu Xu	30020101 US-02	4265

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EXAMINER
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CURS, NATHAN M

ART UNIT	PAPER NUMBER
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2613

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	12/29/2006	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/761,517	<b>Applicant(s)</b> XU, YU	
	<b>Examiner</b> Nathan Curs	<b>Art Unit</b> 2613	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 21 January 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>1/04</u> . | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 6, 7, 12 and 13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claims 6, 7, 12 and 13, the phrase "which may include" is ambiguous. It's unclear whether or not the recitations following the phrase limit the claim.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-4, 6-10, 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li et al. ("Li") (US Patent No. 6396051).

Regarding claim 1, Li discloses apparatus for monitoring channel performance in Dense Wavelength Division Multiplexed (DWDM) optical networks (figs. 7, 8a and 8b and col. 6, line 30 to col. 7, line 59), the apparatus comprising an optical input for receiving an optical signal from a DWDM optical network (fig. 7, element 120), a tunable optical channel selection filter coupled to

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the optical input and having an output (fig. 7, element 124), a tunable optical notch filter having a bandwidth substantially narrower than that of the tunable optical channel selection filter (fig. 7, element 122 and fig. 8a), an optical signal to electrical signal converter having an input coupled to the output of the channel filter for receiving an optical signal from the output of the channel filter, and for converting it into a corresponding electrical signal (fig. 7, element 128 or 130), and signal processing means having an input coupled to the output of the optical signal to electrical signal converter for processing the corresponding electrical signal and an output for providing a processed signal (fig. 7, element 132). Li does not disclose an order of elements for the figure 7 embodiment includes the channel selection filter preceding the notch filter. However, in the figure 13 embodiment, Li discloses a channel selection filter preceding a notch filter, where the figure 13 embodiment is essentially taking the same measurements as the figure 7 embodiment (a channel power measurement and a noise power measurement) but with a different arrangement of the detectors that doesn't require the switch of fig. 7. This suggests that the the channel selection filter preceding the notch filter is relevant to the use of a switch or not, but is not relevant to taking the measurements. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to swap the order of channel filter and notch filter in Li's figure 7 embodiment as an engineering design choice in implementing the channel filter and notch filter. The order of the claimed channel filter and notch filter merely amounts to the selection of expedients known as design choices to one of ordinary skill in the art.

Regarding claim 2, Li discloses apparatus according to claim 1, wherein the optical signal to electrical signal converter comprises at least one photodetector for receiving the filtered optical signal from the output of the tunable optical notch filter and for providing an electrical signal corresponding to the received filtered optical signal (col. 6, lines 30-43).

Regarding claim 3, Li discloses apparatus according to claim 2, wherein the signal processing means receives the electrical signal from the photodetector (col. 6, lines 30-43).

Regarding claim 4, Li discloses apparatus according to claim 1, further comprising a control means for controlling the tuning of at least one of the tunable optical notch filter and the tunable optical channel selection filter (fig. 7, element 132 and col. 7, lines 45-59).

Regarding claim 6, Li discloses apparatus according to claim 1, wherein the signal processing means includes means for carrying out channel transmission analysis (col. 7, lines 45-59). Li discloses determining OSNR using the signal processing means, but does not explicitly disclose BER analysis by the signal processing means. But Li discloses that OSNR dominates determination of BER in general (col. 1, lines 33-46). It would have been obvious to one of ordinary skill in the art at the time of the invention for the Li signal processor to make a BER analysis based on OSNR measurements, since OSNR dominates determination of BER.

Regarding claim 7, Li discloses apparatus according to claim 1, wherein the signal processing means includes means for carrying out optical spectral analysis, which includes wavelength or Signal to Noise (S/N) ratio analysis (col. 7, lines 45-59).

Regarding claim 8, Li discloses a method for monitoring channel performance in Dense Wavelength Division Multiplexed (DWDM) optical networks (figs. 7, 8a and 8b and col. 6, line 30 to col. 7, line 59), the method comprising the steps of: receiving an optical signal from a DWDM optical network (fig. 7, element 120), passing the optical signal through a tunable optical channel selection filter (fig. 7, element 124), passing the optical signal through a tunable optical notch filter (fig. 7, element 122), and processing the optical signal to determine channel performance in the optical network (fig. 7, element 132 and col. 7, lines 45-59). Li does not disclose an order of channel filtering before notch filtering for the method corresponding to figure 7. However, it would have been obvious to one of ordinary skill in the art at the time of

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the invention to swap the order of channel filtering and notch filtering in Li, as described above for claim 1.

Regarding claim 9, Li discloses a method for monitoring channel performance according to claim 8, further comprising the step of converting the optical signal from the tunable optical notch filter into a corresponding electrical signal prior to the processing step (col. 6, lines 30-43).

Regarding claim 10, Li discloses a method for monitoring channel performance according to claim 8, further comprising the step of controlling the tuning of at least one of the tunable optical notch filter and the tunable optical channel selection filter (fig. 7, element 132 and col. 7, lines 45-59).

Regarding claim 12, Li discloses a method for monitoring channel performance according to claim 8, wherein the step of processing includes the step of channel transmission analysis col. 7, lines 45-59). Li discloses determining OSNR, but does not explicitly disclose BER analysis. However, it would have been obvious to one of ordinary skill in the art at the time of the invention to analyze BER in Li based on the OSNR measurements, as described above for claim 6.

Regarding claim 13, Li discloses a method for monitoring channel performance according to claim 8, wherein the step of processing includes the step of optical spectral analysis, which includes wavelength or Signal to Noise (S/N) ratio analysis (col. 7, lines 45-59).

5. Claims 5 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li (US Patent No. 6396051) in view of Blazo (US Patent Application Publication No. 2003/0113114).

Regarding claims 5 and 11, Li discloses apparatus and method according to claims 1 and 8, but does not disclose a wavelength reference source for providing a wavelength reference for calibrating the wavelength of at least one of the tunable optical channel selection

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filter and the tunable optical notch filter. Blazo discloses means for calibrating a tunable optical filter including a wavelength reference source (figs. 3 and 4 and abstract and paragraphs 0002-0012). It would have been obvious to one of ordinary skill in the art at the time of the invention to use calibration means like that of Blazo for the apparatus of Li, to provide the benefit of tunable filter calibration using low cost components, as taught by Blazo.

### ***Conclusion***

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

- US Patent No. 5446812 – discloses measuring SNR using a notch filter and bandpass filter, where the notch filter is at the transmitter side.


7. Any inquiry concerning this communication from the examiner should be directed to N. Curs whose telephone number is (571) 272-3028. The examiner can normally be reached on M-F (from 9 AM to 5 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan, can be reached at (571) 272-3022. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (800) 786-9199.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR

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system, see <http://pairedirect.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



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